metre 0 and 1 cubic metre H. In the gas now 1 cubic metre H goes, whilst 0'5 cubic metre 0 is combined with 0, and thin by formula (6) forms 2x0*5 cubic metre=l cubic metre CO, so that a gas results which contains 1 cubic metre 00+1 cubic metre H.
The percentage by volume of the composition of this gas will be, therefore, 50 per cent. CO and 50 per cent. H, and is characterised by the formula

•Volume H=Volume CO ... (14).

Also one must here (as in gasification by air) obtain from
1 kilogramme C, 1*86 cubic metre CO at 0° and 760 millimetres, but in place of the absent nitrogen, hydrogen of the same volume as the CO must be present, and the quantity of gas which will be obtained from 1 kilogramme C must, undtu-normal conditions, measure 1'86 cubic metre GO+ 1*86 cubic metre H=3'72 cubic metres.

(/) PRODUCTION OF C02 AND H FROM PURE CARBON AND STEAM.

WATER-GAS II.

The action of steam on carbon is also conceivable according to the following formula :—
C+2HaO=COa+4H.
If one conceives according to formula (12) that 2 volumes of steam are decomposed into their constituents, so one obtains
2 volumes of II and 1 volume of 0, of which the former goes over as gas, but the latter must first re-combine with carbon. As C02 results, so there musb, according to formula (2), result from 1 volume of 0 also 1 volume of COa, and the composition of the gas will be
1 Volume C02+2 Volumes H, or 33*3 per cent. C02, and 66'7 per cent H.
The characteristic of this gas will, therefore, be C02=r~i or

- "'2

JI=2C02 . . . (15). As 1 kilogramme C evolves 1-86 cubic metre of C02 (vide (4)), so from consideration of formula (15)